



UNITED STATES PATENT AND TRADEMARK OFFICE

cen

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,339	08/01/2003	Thomas Richards	08935-294001 / M-5029	4181
26161 7590 01/28/2008 FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER ECHELMeyer, ALIX ELIZABETH	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 01/28/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/633,339	Applicant(s) RICHARDS ET AL.	
	Examiner Alix Elizabeth Echelmeyer	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 51-55 and 59-89 is/are pending in the application.
- 4a) Of the above claim(s) 14, 71-82, 86 and 88 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15, 51-55, 59-70, 83-85, 87 and 89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/ are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 9, 2007 has been entered.
2. Claims 51 and 83 have been amended. Claims 16-50 and 56-58 were previously cancelled. Claims 14, 71-82, 86 and 88 were previously withdrawn. Claims 1-13, 15, 51-55, 59-70, 83-85, 87 and 89 are pending and are rejected for the reasons given below.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8, 10, 12, 15, 51-55, 59-68, 83-85, 87 and 89 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson (US Patent 6,955,187).

Regarding claims 1-3, 51-53 and 59-61, Johnson teaches a battery having a control valve for controlling airflow into the battery. The control portion is made of two

cylindrical sleeves, or members, having holes, that can be moved into or out of registration depending on whether air is required for the cell. The movement is controlled by actuators that are attached to the cylinders (abstract; Figure 1; column 3 lines 9-11). Further, Johnson teaches that the current required to induce a shape change in the actuators is generated by electricity from the electrochemical cell (column 4 lines 15-17).

As for claims 4, 15 and 62, as seen in Figure 1, the multiple holes are arranged in columns along the cylinders.

Regarding claims 5 and 63, it can be seen in Figures 5 and 6 that the second member is coupled to the mechanism and that the second member moves in relation to the first.

As for claims 83, 85 and 87, the "first member" of the instant application is considered the inner member of Johnson and the "second member" the outer member. Thus, Johnson also teaches these limitations as discussed above.

As for claims 6, 55, 64, 67, Johnson teaches that the actuators are made of wire shape memory alloys (column 3 lines 55-59).

Regarding claims 7, 65 and 89, Johnson further teaches that the shape memory alloy is preferably TiNi (column 3 lines 59-61).

As for claim 54, in Johnson, the current required to induce a shape change in the actuators is generated by electricity from the electrochemical cell (column 4 lines 15-17).

Regarding claims 10, 12 and 68, it can be seen in Figures 5 and 6 of Johnson that a member is coupled between the actuator and the upper end portion of the second member.

Regarding claims 8, 66 and 84, Johnson teaches that when the valve is in the fully off position, no current flows from the cell to the wire actuator (column 5 lines 22-27).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 13, 69 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson.

The teachings of Johnson as discussed above are incorporated herein.

Johnson discloses the claimed invention except for the shape memory alloy actuator being in the shape of a ribbon instead of a wire. It would have been an obvious matter of design choice to use a ribbon or a wire, since such a modification would have involved a mere change in the shape of the component. A change in shape is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV B)

7. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson as applied to claim 6 above, and further in view of Brotz (US 5,588,295).

The teachings of Johnson as discussed above are incorporated herein.

Johnson fails to teach the mechanism of the instantly claimed invention, specifically, a member made of a shape memory alloy responsive to current which changes from concave to convex, which in turn moves the members in relation to one another.

In Figures 5 and 6 of Johnson, it is seen that two components go into a mechanism that moves the two members in relation to one another. The first, an actuator mechanism (29), contains a shape memory alloy (column 3 lines 55-67). The second is a latch mechanism (94) that changes from concave to convex in shape, depending on how the members are situated relative to one another.

Brotz teaches a memory metal actuator that may be concave or convex in shape depending on the current applied to it (abstract, Figures 3 and 4).

The mechanism of Brotz is further taught to be in a neutral, or straight position when no current is applied (abstract). One of ordinary skill in the art could easily conceive of arranging the latch mechanism of Johnson such that the "first position", or closed position, occurred when no current was being drawn from the battery, since the air holes would be closed and the battery would not be generating current.

It would be desirable to replace the latch and actuator mechanism of Johnson with the actuator of Brotz since the actuator of Brotz would solve the same problem of Johnson, to open or close the members in relation to each other, since it would

eliminate the need for both the latch and the actuator mechanism of Johnson, making production of the cell simpler since fewer parts would be needed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the latch and actuator mechanism of Johnson with the actuator of Brotz, making production of the cell simpler since fewer parts would be needed.

Response to Arguments

8. Applicant's arguments filed July 3, 2007 in the Amendment After Final have been fully considered but they are not persuasive.

The following remarks, also found in the Advisory Action mailed July 17, 2007, are made to follow the order in which arguments were present in the Remarks.

Applicants contend, in the first two pages of the remarks, that the actuator of Johnson changes length, and that a change in length is not a change in shape. The examiner disagrees. The shape memory alloy wires of Johnson, as stated in the fourth paragraph of the second page of the remarks, lengthen or contract. Lengthening and contracting are changes in shape.

Applicants also argue that the mechanism of Johnson includes a bistable latch, making the invention of Johnson more complicated than the instant invention. The examiner believes that the wires of Johnson teach the instantly claimed invention, since the wires (e.g. 90 in Figure 1) change shape to move the cylinders into and out of

registration (column 3 line 1-11). Regardless the extra parts of Johnson, the wires teach a mechanism to move a first member, as required by the claims.

Next, Applicants argue that motivation is lacking to replace the wires, described above, with the actuator of Brotz. Motivation is provided on page 5 of the Final Rejection, mailed April 5, 2007. That motivation includes eliminating the need for both the latch and actuator mechanism of Johnson, resulting in a cell with fewer parts.

Applicants argue that Johnson fails to teach that the actuator only draws power during a change of state. This would be inherent, since if the shape memory alloy actuator of Johnson was drawing power, it would inherently be changing state, so if it is not changing state it cannot be drawing power.

Applicants argue that Johnson does not teach a member between the actuator and the first/second member. The examiner points Applicants to Figures 5 and 6. The actuator mechanism, 29, is attached to the inner member of the can by a rod.

The arguments concerning claims 9-11 state that there is no motivation to combine Johnson with Brotz since the mechanism of Johnson "is more complicated than the examiner acknowledges" (p. 14). As discussed above, the teachings of Johnson meet the limitations of the instant invention. It does not matter what other mechanisms Johnson uses, such as the bistable latch, since the claims do not require that the invention only includes the battery can, first and second members, and a mechanism, such as in claim 1, because the claim is to "a battery compris[ing]" ... The claims are being given their broadest reasonable interpretation, and "comprising" is a non-limiting term (MPEP 2111.03).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1795

aee


SUSY TSANG-FOSTER
SUPERVISORY PATENT EXAMINER